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The Evolutionary Problem with Pain

by David Woetzel

The fact that there is so much pain and suffering in the world has been a puzzle for philosophers and theologians over the years. Theodicy is the name given to the question of how a just and loving God would allow this situation. But most people are unaware that for evolutionists there is a similar problem with pain.

Why is pain so intense? A false step will leave an organism writhing in pain, crying out for days, maybe weeks, before healing sets in. The cry of an animal in distress can attract predators. Debilitating pain is so intense that it overwhelms the desire to eat and procreate.

It would seem that natural selection would have favored less sensitive nerves or brain sensations. As the pain sensation was evolving there should have been some

“push back” against going overboard. Why go to the extra effort of making it all so excruciating?

According to Darwinian theory, even tiny changes that negatively impact survival have been “weeded out” by natural selection. From a mother dreading childbirth, to a toddler learning to walk, to many of us avoiding critical exercise, pain is counter-intuitive toward helping survival and reproduction. Even leading evolutionist Richard Dawkins noted this:¹

Pain, like everything else about life, we presume, is a Darwinian device, which functions to improve the sufferer’s survival.... It remains a matter for interesting discussion why it has to be so...painful. Theoretically, you’d think, the equivalent of a

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Dealing with the Missing Population III Stars

by Steve Miller

For decades evolutionary proponents have had a fundamental problem with their Big Bang (BB) explanation, because their explanation of how the universe began depends on the existence of Population III (Pop III) stars.¹ *Astronomy* magazine has published an article, titled *In Search of the First Stars*,² in which the author tries to convince the magazine’s readers of the existence of these stars.

What’s the problem?

What’s the problem? Since these stars, according to evolutionary theory, are the “grand-daddies” of all stars in the universe, astronomers should have found zillions of these stars by now, if we are truly looking back into time as we gaze across the universe. But alas, not a single one has ever been discovered!

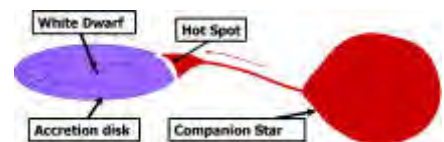
The late Carl Sagan said, “Many scientific papers are written each year about the Oort Cloud, its properties, its origin, its evolution. Yet there is not yet a shred of direct observational evidence for its existence.”³ The exact same thing can be stated for the alleged Pop III stars, viz., that there is not yet a shred of direct observational evidence for their existence. In articles such as this one in *Astronomy*,² the reporting of what the evolutionary astronomers “think took place,” or their stating that “researchers have developed scenarios from sophisticated computer models” for the missing Pop. III stars are just ad-hoc special pleading.

Why? Because the magazine included another article in the same issue that actually **refutes** what they claim about their comput-

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Where is the Intracluster Medium in Globular Clusters?

by Ron Samec, Ph.D.



Globular clusters (GC) are spherically shaped, rich clusters of stars (usually 50,000-500,000 solar masses) that orbit their galaxies at random inclinations and eccentricities, much like comets in orbit about the solar system. Forming a roughly spherical component in the galaxy, called the Halo, they are high velocity, population II objects. Pop II objects include novae, RR Lyrae stars, and red giants, as well as GC’s. They are not associated with dust and gas, like the population I objects which populate the disk of the galaxy. They have a “metallicity” of less than 1% (metallicity is the abundance of elements more massive than helium).

GC’s are readily seen in images of elliptical galaxies, as what appear to be still images of stars “swarming” about the galaxy like fireflies. Of course, individual stars cannot be seen at this distance, but the GC’s are easily visible. Observations of these objects reveal that they are true to their specified population. They are clear of intracluster medium (ICM), that is, dust and gas.

Missing gas and dust

However, a problem is easily seen. Stars, as they age, blow off stellar winds of gas and dust. Therefore, GC’s as well as their

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'twins,' the dwarf spheroidal galaxies that orbit as companions to their parent galaxies, should accumulate dust and gas steadily from these winds. ICM should accumulate in the galaxy until the GC passes through the plane of the galaxy in its orbit. This plane passage occurs about every 10^8 – 10^9 years.

It is hypothesized that the "most robust mechanism for clearing ICM is ram pressure stripping during disk crossing." (Moore and Bildsten, 2011; hereafter, M&B). So disk crossings are far and few between! In the mean time the ICM is accumulating and most globular clusters should have lots of gas and dust, in disagreement with their Pop II status.

What do the observations tell us? Infra-red Spitzer observations place upper bounds on dust masses 10 – $100\times$ below that expected, exactly like its Pop II counterparts. M&B summarize,

Observations of the intra-cluster medium (ICM) in galactic globular clusters (GCs) show a systematic deficiency in ICM mass as compared to that expected from accumulation of stellar winds in the time available between galactic plane crossings.

Globular clusters should have much higher dust and gas accumulations than is actually observed. Where is the missing ICM in globular clusters? M&B hypothesize that globular clusters lose their ICM by outflows from outbursts of classical novae in the cluster.

A classical nova is a binary star consisting of a white dwarf (WD; a compact core from a star that has lost its atmosphere) and a normal star companion which has filled its critical surface (called a Roche Lobe) and is streaming gas (hydrogen) toward the WD. The stream spirals in and creates a disk and a hot spot, as illustrated in the accompanying figure. The inner disk eventually funnels the gas onto the surface of the WD where hydrogen gas accumulates. The temperature of the gas rises as the pressure increases, and eventually the hydrogen ignites in a thermonuclear runaway — a novae outburst occurs. This causes a fast outflow of gas at about 1000 km/s.

The rate of occurrence of novae outbursts in a GC is quite variable and not well known. M&B assumed a rate of 20/year/ 10^{11} solar masses in the cluster. Further study shows that more massive clusters will have a clearing problem due to "runaway" accumulations between novae outbursts — their mechanism seems only to work well in low

mass GC's. Their hopeful remark is, "A very robust mechanism to clear the ICM is Type Ia Supernovae."

Of course we have been talking about novae here and not super novae! Super novae are some 11 orders of magnitude brighter than novae and eject matter at 10,000 km/s! Certainly a super novae *would* help things along but they are very rare indeed! They are 500 times rarer than M&B's assumed rate!

Creation Perspective

If the ICM is $1/10^{\text{th}}$ to $1/100^{\text{th}}$ the amount expected, and plane crossings are 10^8 – 10^9 years apart, this gives a range of age limits of the globular clusters of only 10^6 – 10^8 years, similar to the age predicted for spiral galaxies (in time dilation cosmologies such as that of Humphreys or Hartnett) to wind up and lose their "spiralness" (Humphreys, n.d.), and much less than the 13.7×10^9 years given by cosmologists for the age of the cosmos ($1/100^{\text{th}}$ to $1/100,000^{\text{th}}$ of this age!). A simpler explanation is that clusters have not been orbiting long enough to accumulate much ICM! The universe is young and the actual age in "earth time" is only about 7000 years.

References

- Humphreys, D.R. n.d. Evidence for a young world. www.icr.org/article/1842/ (accessed 31 May 2011)
- Moore, K. and L. Bildsten. 2011. Clearing the gas from globular clusters and dwarf spheroidal galaxies with classical novae. *The Astrophysical Journal* 728(2):81.

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Problem with Pain

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little red flag could painlessly be raised somewhere in the brain.... Perhaps grappling with this question is evolutionary theory's own theology. Why so painful? What's wrong with a little red flag? I don't have a decisive answer.

Not long ago Allen MacNeill, professor of biology and evolution at Cornell University, was blogging about the intense pain he suffered while passing kidney stones. He wrote,²

I describe all of this, not to elicit your sympathy, but to introduce 'the problem of pain' from the standpoint of evolutionary biology. All of the rest of our senses have a physical referent: heat receptors sense heat, cold receptors cold, taste receptors sugars and ions and acids and bases and certain amino acids in our food, rods and cones sense the presence of light photons, etc. But pain receptors do not sense the presence of 'pain.' No, 'pain' is an 'artificial sensation.' What pain receptors are adapted to sensing is cellular damage.... Yet, two questions immediately present themselves: why should passing a kidney stone produce pain at all, and why is the pain so intense?

The brain has no pain receptors, allowing patients to undergo brain surgery while fully conscious. But the rest of our internal organs acutely sense pain. There really is no good evolutionary explanation for this.

Overshooting the mark

Perhaps some evolutionists would concur that evolution "overshot the mark" in its development of pain in higher organisms, but they might then argue that the necessary mutations for mitigating pain receptors were

never presented for natural selection to select. But this seems to be refuted by evidence that varying pain thresholds already exist in the population.

From a purely biological point of view, pain nerves, just like all nerves in the body, have a threshold at which they fire. There is no sliding scale; they are either on or off. The reason that pain may be more or less intense will depend on the number and types of nerves which fire. But researchers have consistently found varying pain tolerance based on age, physical fitness, and gender. Studies have even suggested that non-intuitive traits like hair color³ and hand dominance⁴ can affect pain threshold!

So why do we have pain? The most satisfying answer is not found in the evolutionary paradigm. C.S. Lewis, in his classic book *The Problem of Pain*, stated the issue as follows:⁵

If God were good, he would wish to make his creatures perfectly happy, and if God were almighty he would be able to do what he wished. But the creatures are not happy. Therefore God lacks either the goodness, or power, or both.

Lewis replies to this by saying we need to look more closely at erroneous assumptions built into the words "all-powerful" and "good." The "all-powerfulness" of God is taken to mean that God can do anything. But this view is misguided. Having made the universe to work in certain consistent ways, God does not arbitrarily change these laws whenever potential harm rears its head. If God kept changing the way things normally operate in the universe, it would be impossible for us to rise to genuine challenges or act responsibly within it.

Lewis also examines how people tend to misunderstand "divine goodness." We tend to view goodness as merely making us happy all the time. We need to see that for

God, loving kindness is giving us what is ultimately best for us. If suffering brings us closer to Him, then it is good. Perhaps one of Lewis' most famous quotes is:⁶

God whispers to us in our pleasures, speaks in our conscience, but shouts in our pains: it is his megaphone to rouse a deaf world.

Ultimately, pain is a result of the Fall of Man. Sorrow, pain, and death are part of the curse found in Genesis 3:16-19. God said to Eve, "I will greatly multiply thy sorrow and thy conception; in sorrow thou shalt bring forth children..." He said to Adam, "cursed is the ground for thy sake; in sorrow shalt thou eat of it all the days of thy life..."

Pain was not part of God's original creation, and the day will come when it will be eradicated from the New Earth that He will create. Revelation 21:4 states, "And God shall wipe away all tears from their eyes; and there shall be no more death, neither sorrow, nor crying, neither shall there be any more pain."

References

1. Dawkins, R. 2010. *The Greatest Show on Earth*. New York: Free Press., p. 393.
2. Retrieved May 19, 2011, from <http://evolutionlist.blogspot.com/2008/03/on-problem-of-pain.html>
3. Binkley, C.J., A. Beacham, W. Neace, R.G. Gregg, E.B. Liem, and D.I. Sessler. 2009. Genetic variations associated with red hair color and fear of dental pain, anxiety regarding dental care and avoidance of dental care. *The Journal of the American Dental Association* 140(7):896-905.
4. Pud, D., Y. Golan, and R. Pesta. 2009. Hand dominance—A feature affecting sensitivity to pain. *Neuroscience Letters* 467:237-240.
5. Lewis, C.S. 1940. *The Problem of Pain*. New York: Macmillan, p. 16.
6. Lewis, Ibid., p. 93.

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Missing Population III

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er simulations. Reading from the sister article, *First Stars were Social Creatures*, we find this statement:⁴

But new research indicates the theory needs some reworking because the simulations show that the disks of matter that would go on to form the earliest stars **would probably break apart** (emphasis added).

Computer simulations

There are three problems about computer simulations that should be considered. First, these evolutionary proponents control **all** the variables that are used to run the simulations, and they still cannot make them work. Why? They explain this away by saying that there are variables about which they have no knowledge or *haven't made up yet to force it to work*. But they would never think that their naturalistic explanation of star formation could be wrong.

Second, there's an intrinsic fallacy with computer simulations, namely, that these secular scientists "always assume" that if they can make it work on a computer then "it must have happened that way in nature," without any field testing or real observational support. Computer simulations can be a useful tool when they can be verified by actual laboratory testing or observations in the field, which is what real science is all about. But all these alleged, evolutionary cosmological explanations can never be tested because these events happened in the

unobservable past, whereby there is no way to test any of these hypotheses in the present. Therefore, their explanation is completely model dependent, which will be discussed in a moment.

The third problem, and the most significant, is the claim in the article that the Pop. III stars were super massive in size. The author says, as absolute fact, that the Pop. III stars spanned more than 100 times our sun's diameter.⁵ This assertion begs the question, *how could any of these evolutionary astronomers say how big these stars were if they have never seen one?* This goes back to the same issue Carl Sagan brought up about the alleged Oort cloud. To say these stars were super massive, without any actual way to verify the claim, is disingenuous at best, if not completely dishonest!

Good science

Is this what modern secular astronomy has fallen to, that evolutionists can make any claim they want, without any supportive observational data or actual testing? And then the evolutionists call this *good science*. They can call it "good," but it is not really science because real science can be tested and observed.

Another engaging reason for apprehension is the way the article is concluded. The author states, "But no telescope has ever seen into the first 480 million years after the CMB [cosmic microwave background] left its imprint."⁶ This could be true if one assumes the BB to begin with, but this is leading to another torrid excuse. Enter the James Webb Space Telescope, which will peer deeper into space than anything we have now.⁷

But, the article concludes with the statement that the Pop. III stars will be almost certainly beyond the reach of this telescope, too, even though it will see deeper into space than anything before it.⁸ Here they go again, already making an excuse or explaining away why they will not find any Pop. III stars. So much for good science.

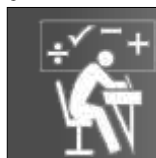
This *Astronomy* article is a classic example of what is meant when an explanation is described as "Model Dependent." In other words, the explanation the evolutionists use to explain away the Pop. III star problem has to be true because they have already assumed the BB model to be true. They would never be honest enough with themselves to look at the totally non-existent evidence of Pop. III stars and conclude that

the "BB never happened." With all their might and fury, these naturalists would fight to the bitter end not to give that answer the smallest bit of consideration. The BB could never be falsified — just ask them, and they will tell you!

References

1. Miller, S. 2007. Population III stars and the Big Bang model. *Creation Matters* 12(5):3. www.creationresearch.org/creation_matters/pdf/2007/CM12_05_low_res.pdf
2. Villard, R. 2011. In search of the first stars. *Astronomy*, June, p. 26.
3. Sagan, C. and A. Druyan. 1985. *Comet*. Random House, New York, p 201.
4. Andrews, B. 2011. Astro News: First stars were social creatures. *Astronomy*, June, p. 20.
5. Villard, op. cit., 28.
6. Ibid, p. 26.
7. Ibid, p. 30.
8. Ibid, p. 31.

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Math Matters by Don DeYoung, Ph.D.



Precise Clocks in Nature

There is an interesting history to time standards. Initially, one second was defined as 1/86,400 of a solar day or earth rotation. However, such a second is uncertain because earth's rotation is slightly irregular. The vibration of a slice of quartz crystal is commonly used to keep modern watches accurate. This compact time standard loses less than one second in a year. Far more precise time measurement is essential for global positioning systems, space navigation, and physics research.

To the rescue

Atomic clocks came to the rescue in the 1950s. An exact frequency of light is emitted by excited atoms which are cooled to near absolute zero. One definition of a second of time equals 9,192,631,770 vibrations of microwave radiation emitted between two electron energy states of the cesium-133 atom. This precise cesium clock has a variation of less than one second in 300 million years. Atomic clocks also use vibrating



atoms or molecules of rubidium, hydrogen, and ammonia.

We now find that the most accurate clocks of all may exist in space. Pulsars, also called neutron stars, are collapsed stars. Their rotation is often rapid, similar to a skater who spins more rapidly by pulling his or her arms inward. Some "millisecond pulsars" appear to rotate at hundreds of cycles per second. In the process, they typically give off regular pulses of radio waves or visible light. Many pulsars rival atomic clocks in the regularity of their emitted signals. There is even a website which al-

lows one to listen to sounds corresponding to the pulsar signals.¹

Pulsating stars

Light variation from pulsating white dwarf stars provides an alternate form of ultra stable clocks. One example from the ZZ Ceti variable dwarf star category has a measured variation period of 213.1326045 seconds.² Thousands of pulsating stars have been detected in the Milky Way Galaxy. Thus, there is great potential for time standards in the sky above.

One is reminded of the biblical purpose of lights in the heavens as "signs and seasons, and for days and years" (Gen. 1:14).

References

1. www.jb.man.ac.uk/~pulsar/Education/Sounds/sounds.html
2. Roth, J. and A. MacRobert. 2004. White dwarfs as ultra stable clocks. *Sky and Telescope* 107(2):17.

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Matters of Fact...

by Jean K. Lightner, DVM, MS

How Old is the Earth?

Editor's note You may submit your question to Dr. Jean Lightner at jean@creationresearch.org. It will not be possible to provide an answer for each question, but she will choose those which have a broad appeal and lend themselves to relatively short answers.

Q If scientists have determined that the earth is 4.5 billion years old, why would anyone in his or her right mind think the earth is only around 6,000 or so years old?

A Perhaps a better question to start off with is: Why would a person believe that science can be used to accurately determine the age of the earth? Was there a scientist who observed the forming of the earth? If not, then clearly it is impossible to directly measure the age of the earth.

Scientists have come up with ways to *estimate* the age of the earth. Generally, scientists can observe the current state of a system, measure a process rate in that system, assume certain things about the past, and calculate how long it would take for that process to produce the current state. Observing, measuring and calculating are things scientists do very well. If there is going to be a problem with the estimate, it will most likely involve the assumptions.

Never assume

The “accepted” age of the earth has changed significantly over time. The current estimate of 4.6 billion years is based on radiometric dating of a meteorite named Allende. The oldest rocks on earth do not date this old by radiometric techniques. However, scientists have proposed that metamorphosis of earth’s first rocks would make them yield unreliable dates. Since meteorites are believed to be remnants of a planet which broke up after condensing, and thus are assumed to be the same age as earth, radiometric dates for Allende were considered to provide a reasonable estimate for the age of the earth (Morris, 2007, p. 59).

Radiometric dating itself comes with several assumptions. First, since the initial conditions were not observed, they must be assumed. Second, it is assumed that none of the isotopes being measured have traveled into or out of the rock since its formation. Finally, it is assumed that radioactive decay has always occurred at a constant rate. On the surface these may seem quite reasonable, but observations have given us reasons to question them (Morris, 2007, p. 50-54).

Pick a date — any date

It would be easier to be comfortable with radiometric dating if the dates calculated were

fairly consistent. Unfortunately, this is often not the case. Allende was assigned different dates by different radiometric techniques. Additionally, different dates were calculated when different portions of the rock were tested by the same technique (Morris, 2007, p. 59-60). So in the end, scientists had a variety of dates to choose from and accepted the date with which they were most comfortable. This was the date that was conveyed to the public.

Speaking of a variety of dates, there are numerous other methods that can be used to estimate the age of the earth. While most dates based on radioisotope techniques give old (billions of years) dates, many other methods give dates far too young for evolutionists to accept (Humphreys, 2005). One method of particular interest is based on the rate at which helium, a product of radioactive decay, leaks out of certain crystals (Humphreys, et al., 2004). The age estimate using this method is 6000 (± 2000) years. This research provides one of several lines of evidence that strongly challenges the assumption of a constant decay rate, which had previously been considered one of the strongest assumptions of radiometric dating.

Calibration

It would be nice if some of these methods could be tried out on things of known age. If a method was reasonably accurate on things of known age, then we should be able to have more confidence when it is applied to things of unknown age. Radioisotope dating can be checked this way. According to theory, the radiometric clock starts ticking when lava hardens to rock. Rocks from historic lava flows, where the event was recorded by someone who observed it, can be tested. These dates should be off the low end of the scale since they are so recent and radiometric techniques supposedly work best for older rocks.

Numerous historic lava flows have been tested. They often yield dates that are clearly on the radiometric scale and much older than the date known from history (Vardiman, Snelling, and Chaffin, 2000, pp. 126–129, 189). In a number of cases the radiometric dates are tens of thousands of times older than the date known from history (Morris, 2007, p. 51–52). This does not instill much confidence in the accuracy of radiometric dating techniques as they are currently used.

Science or History?

At this point it should be obvious that science alone is not an effective way to determine the age of the earth. This is because the age of the earth is a historical issue, not a scientific

issue. Despite the many attempts to estimate the age “scientifically,” conflicting results are often obtained.

Ideally, the best way to determine the age of the earth is to have the testimony of an eyewitness. But who was there when the earth was formed? According to the Bible, God was there, since he is the one who created it. The Bible gives us enough information to estimate the age of the earth as being around 6,000 years or so. There is no scientific reason for rejecting this age. People who reject it do so for philosophic reasons.

Your bias is showing

Historically, the idea that the earth was millions to billions of years old was based on a shift in philosophy, not on scientific discovery (Mortenson and Ury, 2008). Even today, this belief is maintained by dismissing the historical account in Genesis, rather than considering it as a possibility. The bias of those who believe the earth is billions of years old causes them to view dates differing from their expectations as being wrong. The public normally does not hear about these results, while the ones that fit with the current paradigm are publicized.

In the end, the view that the earth is somewhere around 6,000 years old is a very reasonable view. It is based on the history given in the Bible. While science itself cannot conclusively distinguish between a younger (ca. 6,000-year-old) earth and an older (4.5 billion) one, much existing geologic data seems far more easily explained by a biblical model than the current evolutionary one (Morris, 2008, pp. 96–119).

References

- Humphreys, D.R., S.A. Austin, J.R. Baumgardner, and A.A. Snelling. 2004. Helium diffusion age of 6,000 years supports accelerated nuclear decay. *Creation Research Society Quarterly* 41(1):1–16.
- Humphreys, D.R. 2005. Evidence for a young world. *Acts & Facts*. 34 (6).
- Morris, J. 2007. *The Young Earth The Real History of the Earth Past, Present, and Future*. Master Books, Green Forest, AR.
- Mortenson, T. and T.H. Ury (editors). 2008. *Coming to Grips With Genesis Biblical Authority and the Age of the Earth*. Master Books, Green Forest, AR.
- Vardiman, L., A.A. Snelling, and E.F. Chaffin (editors). 2000. *Radioisotopes and the Age of the Earth A Young Earth Creationist Research Initiative*. Institute for Creation Research, El Cajon, CA, and Creation Research Society, Chino Valley, AZ.

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Speaking of Science

Editor's note: Unless otherwise noted, S.O.S. (Speaking of Science) items in this issue are kindly provided by David Coppedge. Opinions expressed herein are his own. Additional commentaries and reviews of news items by David, complete with hyperlinks to cited references, can be seen at: www.creationsafaris.com/crevnews.htm. Unless otherwise noted, emphasis is added in all quotes.

Are Earthquakes Increasing?



The recent rash of deadly earthquakes has many people asking: is this unusual? Have the frequency and intensity of earthquakes been increasing in recent years? Geologists secular and theistic have weighed in on the question.

Two reporters at *LiveScience*^{1,2} took up the issue and quoted geologists who concluded that the long-term pattern is random. Richard Kerr for *Science Magazine News*³ quoted experts on both sides: some who see the trend as unusual, some who see it as random.

There's no question that the recent series of megaquakes (Japan, Indonesia, New Zealand, Chile) has been a cluster. But there have been other clusters of great quakes, notably a series from 1952 to 1964. We've only been measuring earthquake magnitudes for about 100 years, so scientists do not have a long enough record to fully establish the random hypothesis.

It takes many trials to get reliable statistics. That's why Richard Kerr titled his article, "More Megaquakes on the Way? That Depends on Your Statistics." What remains to be seen is whether one great quake can trigger others across the globe. Some geologists are preparing models to see if future quakes will confirm or disconfirm the random hypothesis as opposed to the trigger hypothesis.

Steve Austin, a prominent creationist geologist, has also written on the subject.⁴ He included more long-term data from historical reports and agreed that the perception of increasing numbers of earthquakes in recent years is an illusion: "Since good seismographs went into operation late in the 1890's, no steady trend suggesting increased frequency or intensity has been demonstrated." Other factors contribute to the illusion: rapid reporting, larger populations in urban centers, and consequent greater damage and loss of life.

Noting that Jesus had prophesied "There will be earthquakes in divers places" as the "beginning of birth pangs" of his coming (Matthew 24:7; Mark 13:8), Austin said it is not necessary to interpret the metaphor as an increase in frequency and intensity, but as something erratic and unpredictable: "Global seismic activity is very non-uniform in time; it is like waiting for birth pangs."

1. Choi, C.Q. (2011, April 20). Are we in an age of great earthquakes? *LiveScience*. Retrieved June 7, 2011, from www.livescience.com/13813-earthquakes-age-megaquakes.html
2. Ham, B. (2011, April 8). Are mega earthquakes on the rise? *LiveScience*. Retrieved June 7, 2011, from www.livescience.com/13632-mega-earthquakes-increasing-japan-indonesia.html
3. Kerr, R.A. 2011. More megaquakes on the way? That depends on your statistics. *Science* 332(6028):411.
4. Austin, S.A. (n.d.). Earthquakes in these last days. *ICR*. Retrieved June 7, 2011, from www.icr.org/article/earthquakes-these-last-days/

Plants Generate Their Own Sunscreen

Ultraviolet radiation hits plants as well as humans, but plants can't reach for a tu of sunscreen. Too much exposure can damage them; what do they do? They have a sensor that turns on production of their own brand of sunscreen and spreads it on their skin automatically.

UV-B rays are the most damaging rays in sunlight. In *Science*¹ researchers at the University of Glasgow explained how plants have a protein named UVR8 that normally exists as inactive dimers. UV-B rays break up the pairs; as monomers now, UVR8 proteins link up with a protein named COP1. This combination signals the nucleus to ramp up production of sunscreen. The abstract said in jargon,

Absorption of UV-B induces instant monomerization of the **photoreceptor** and **interaction** with COP1, the **central regulator** of **light signaling**. Thereby this **signaling cascade** controlled by UVR8 **mediates** UV-B photomorphogenic **responses** securing plant **acclimation** and thus **promotes survival** in sunlight.

Professor Gareth Jenkins explained for *University of Glasgow News*,²

When a plant **detects** UV-B light this light **stimulates** the **synthesis** of **sunscreen compounds** that are **deposited in the outer tissues** and absorb UV-B, **minimizing any harmful transmittance** to cells below.

So it's not just having UVR8 able to absorb the harmful photons — it's also a matter of having them link up with other proteins and switch-on genes — then having the gene products arrive at the proper destination to give protection quickly.

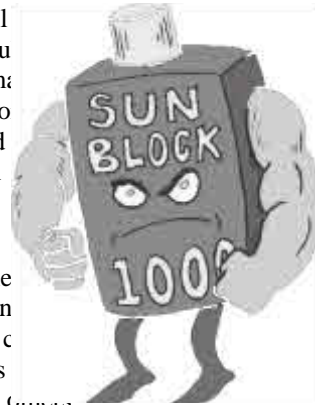
Scientists knew plants were able to protect themselves, but didn't know what photoreceptor was sensitive to UV-B light. "UVR8 is **always present throughout a plant** so it **can respond immediately** to sunlight," the press release said.

1. Rizzini, L., J.J. Favory, C. Cloix, D. Faggionato, A. O'Hara, E. Kaiserli, R. Baumeister, E. Schäfer, F. Nagy, G.I. Jenkins, and R. Ulm. 2011. Perception of UV-B by Arabidopsis UVR8 protein. *Science* 332(6025):103–106.
2. Anonymous (2011, March 30). Experts reveal why plants don't get sunburn. *University of Glasgow News*. Retrieved June 7, 2011, from www.gla.ac.uk/news/headline_194306_en.html

Why Stuff Evolves: Not Having Stuff Would Be Terrible

The delicate yet effective choreography of DNA damage repair was described by Lawrence Berkeley National Lab¹ in terms of amazement: "**Safeguarding genome integrity through extraordinary DNA repair.**" DNA repair is essential for health:

To prevent not only gene mutations but broken chromosomes and chromosomal abnormalities known to cause cancer, infertility, and other diseases in humans, prompt, **precise DNA repair is essential.**



But can something evolve just because it is needed?

Homologous recombination is a **complex mechanism** with **multiple steps**, but also with many points of regulation to **insure accurate recombination at every stage**. This could be **why this method has been favored during evolution**. The **machinery** that relocates the damaged DNA before loading Rad51 **might have evolved because the consequences of not having it would be terrible**.

That seems an odd way to describe evolution. If evolution is a chance process with no goal or purpose, it would not care if something emerges or not. How can a mindless process “favor” a method? How would a mindless process “know” that the consequences of not having something would be terrible? How would that motivate a non-mind to produce machinery and complex mechanisms to avoid terrible consequences?

1. Preuss, P. (2011, April 18). Safeguarding genome integrity through extraordinary DNA repair. *Berkeley Lab*. Retrieved June 7, 2011, from <http://newscenter.lbl.gov/feature-stories/2011/04/18/dsb-hetero/>

Upsets in Space

Three different astronomy teams have announced findings that upset long-held beliefs. What does this portend about the confidence we can have in other theories?

1. Galaxy growth: direct challenge. “Galaxies are thought to develop by the gravitational attraction between and merger of smaller ‘sub-galaxies,’ a process that **standard cosmological ideas** suggest **should be ongoing**,” announced the Royal Astronomical Society.¹ “But **new data** from a team of scientists from Liverpool John Moores University **directly challenges this idea**, suggesting that the growth of some of the most massive objects **stopped** 7 billion years ago when the Universe was half its present age.”

How serious is this claim? “The lack of growth of the most massive galaxies is **a major challenge to current models of the formation and evolution of large scale structure in the Universe**,” commented Claire Burke, team member. “Our work **suggests that cosmologists appear to lack some of the crucial ingredients they need to understand** how galaxies evolved from the **distant past** to the **present day**.”

2. Star spin: poking holes. Researchers at the University of Michigan² have poked holes in a “century-old astronomical theory.” The theory, called the von Zeipel law, “has been **used for the better part of a century to predict** the difference in surface gravity, brightness and temperature between a rapidly rotating star’s poles and its equator.”

Doctoral student Xiao Che and other astronomers on the team found that the data from Regulus don’t fit the theory. “It is **surprising** to me that von Zeipel’s law has been **adopted in astronomy for such a long time with so little solid observational evidence**.”

3. Impossible wet comet: shattering paradigms. “**Current thinking suggests** that it is **impossible** to form liquid water inside of a comet,” states a press release from University of Arizona.³ But lo and behold, Comet Wild-2 explored by the Stardust spacecraft found minerals that could only have formed in the presence of water.

This is a shattering find: “For the first time, scientists have found convincing evidence for the presence of liquid water in a comet, **shattering the current paradigm that comets never get warm enough to melt the ice** that makes up the

bulk of their material.” The press release was echoed on *PhysOrg*.⁴

When a paradigm gets shattered in one area of science, there can be ramifications for others, depending on how foundational it was. The American philosopher Willard Quine noticed that when faced with potentially falsifying data, scientists often absorb the shocks into their “web of belief” without changing the web.

1. Anonymous (2011, April 21). NAM 03: Large galaxies stopped growing 7 billion years ago. *Royal Astronomical Society News Archive*. Retrieved June 7, 2011, from www.ras.org.uk/news-and-press/217-news2011/1947-nam-03-large-galaxies-stopped-growing-7-billion-years-ago
2. Anonymous (2011, April 18). Zoom-up star photos poke holes in century-old astronomical theory. *University of Michigan News Service*. Retrieved June 7, 2011, from <http://ns.umich.edu/htdocs/releases/story.php?id=8374>
3. Stolte, D. (2011, April 5). Frozen comet had a watery past, UA scientists find. *UANews*. Retrieved June 7, 2011, from <http://uanews.org/node/39041>
4. University of Arizona (2011, April 5). Frozen comet had a watery past, scientists find. *PhysOrg*. Retrieved June 7, 2011, from www.physorg.com/news/2011-04-frozen-comet-watery-scientists.html

Dinosaur Classification Is a Mess

Are there a thousand species of dinosaurs — or far fewer? John Horner, a dinosaur hunter himself, thinks the classification is a mess and wants to clean it up. According to *Science Magazine News*¹ Horner is worried that

...with **almost 1000 types of dinosaurs on record** and **a new species being named somewhere in the world every 2 weeks** — too many supposedly new discoveries are **actually duplicates of animals already on the books**.

Another paleontologist, Michael J. Benton, estimates that over half of the named dinosaurs are misclassified.

Apparently human pride is to blame. “Part of the problem, Horner says, is that **scientists are sometimes too keen on finding and naming new dinosaurs**.” Naming a new dinosaur gets you noticed and published. As a result, fossil hunters tend to focus on the differences instead of the similarities. Additionally,

...paleontologists are coming to realize that the **bones of an adult dinosaur can be very different** from those of a **juvenile** animal of the same species and **can easily mislead scientists** into thinking they are two different species.

Ignoring these pitfalls can lead to misinterpretations about dinosaur evolution.

Early in their development, Horner explains, the **skulls of young dinosaurs may resemble the relatively unspecialized skulls of primitive ancestral species**. To avoid **confusion**, paleontologists must know precisely where a specimen came from, how it appeared while still encased in rock, and which level it occupied in a geologic formation.

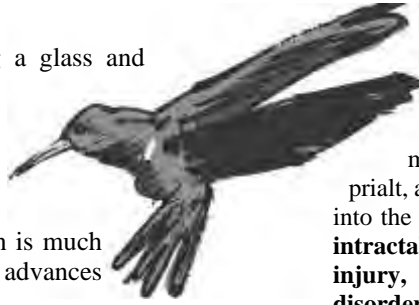
Horner has proposed a “Unified Frame of Reference” (UFR) to fellow paleontologists to try to rein in these problems.

1. Margottini, L. 2011. Is it time to declutter the dinosaur roster? *Science* 332(6031):782.

... continued on p. 8

Hummingbird Tongue More Clever than Previously Thought

Humans sip their nectar by tipping a glass and slurping, but how can a hummingbird pull liquid out of flowers with a tongue alone? Up until now, scientists thought that hummingbird tongues acted like capillary tubes. New research with high-speed cameras shows that the action is much more clever — so clever it might lead to advances in human machinery.



*PhysOrg*¹ posted a summary of a paper in *PNAS*,² where scientists from the University of Connecticut decided to check out how hummingbirds do it. Using high-speed cameras on 30 hummingbirds from 10 species, Rico-Guevara and Rubega discovered that the hummingbird tongue acts as a fluid trap, not a capillary tube.

The tongue splits into two parts, lined with hair-like extensions called lamellae. As the bird pulls the tongue out from the nectar, the two parts come together automatically and trap the nectar, pulling the food into the mouth. The *PhysOrg*¹ article includes four video clips showing the action in slow motion.

The researchers further discovered that the same action occurs when the tongue of a dead bird is pulled through simulated nectar, showing it is an automatic action, “therefore highly efficient because no energy expenditure by the bird is required to drive the opening and closing of the trap.” According to the article, hummingbirds flick their tongues in and out of the nectar as fast as 20 times per second.

The abstract from the paper ended with a tantalizing hint of where this research can lead: “We propose a conceptual mechanical explanation for this unique fluid-trapping capacity, **with far-reaching practical applications (e.g., biomimetics).**”

1. Braconnier, D. (2011, May 3). How the hummingbird’s tongue really works (w/ video). *PhysOrg*. Retrieved June 8, 2011, from www.physorg.com/news/2011-05-hummingbird-tongue-video.html
2. Rico-Guevara, A. and M.A. Rubega. 2011. The hummingbird tongue is a fluid trap, not a capillary tube. *PNAS* 108(23):9356-9360.

Venom for Health

Remember when botulinum toxin, one of the most potent poisons known to man, entered medical science for good? Now fashion models brag about how “botox” improved their good looks, and sufferers of excess sweating or migraines find relief with the neurotoxin. The search for good in bad substances has not stopped; other venomous organisms, once a scourge of mankind, are being investigated as agents of health for our bodies and our crops.

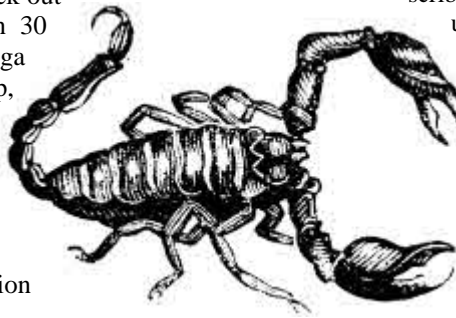
1. Nature’s pharmacy: *LiveScience*¹ listed the following plants and animals as potential sources of medicine: venomous cone snails, cave creatures, sap from the guggel tree, a weed from the Nile, and various extracts from sea squirts. “**Nature is a prolific source of new medicines,**” the article

said. “In fact, natural products have led to **more than half of the new drugs** introduced during the **past 25 years.**”

A passing reference to evolution said, “**Over millions of years**, organisms **have evolved** protective chemicals that interact with specific proteins in their enemies,” but did not elaborate on how that could have happened or how the organisms survived without them in the meantime. “Where **nature is hiding** the next **medical treasure** is anyone’s guess.”

2. Snail drug store: Back in February, *PhysOrg*² mentioned work at the University of Utah to isolate prialt, a venom from a marine cone snail. “Prialt is injected into the fluid surrounding the spinal cord **to treat chronic, intractable pain** suffered by people with **cancer, AIDS, injury, failed back surgery or certain nervous system disorders.**”

3. Scorpion fertilizer: An article on *ScienceDaily*³ describes work at Michigan State to understand scorpion venom as a useful pesticide for farmers. Apparently the venom attacks some ion channels in insects but not mammals. If researchers can determine why, they may be able to design pesticides that selectively attack insects without hurting other animals. They are using the Israeli desert scorpion as their model organism.



4. Spider painkiller: Back in March, *ScienceDaily*⁴ reported on work at UC Riverside to isolate a toxin in the American funnel web spider that appears effective in blocking the action of calcium channels. “The toxin offers a new target for studying T-type channels, which play a role in congestive heart failure, hypertension, epilepsy and pain.”

The *LiveScience* article mentioned above explained why natural substances hold promise for medicine: “Because all living things share the same basic biochemistry, those chemicals can interact with the same proteins in people.” Sometimes a little poison, injected into the right place under the right conditions, can bring healing and relief.

1. National Institute of General Medical Sciences (2011, May 4). Nature: The master medicine maker. *LiveScience*. Retrieved June 8, 2011, from www.livescience.com/14016-natural-products-nih.html
2. University of Utah (2011, February 17). Venom of marine snails provide new drugs. *PhysOrg*. Retrieved June 8, 2011, from www.physorg.com/news/2011-02-venom-marine-snails-drugs.html
3. Michigan State University (2011, May 1). Scorpion venom: Bad for bugs, good for pesticides. *ScienceDaily*. Retrieved June 8, 2011, from www.sciencedaily.com/releases/2011/04/110427154308.htm
4. American Institute of Physics (2011, March 9). Newly identified spider toxin may help uncover novel ways of treating pain and human diseases. *ScienceDaily*. Retrieved June 8, 2011, from www.sciencedaily.com/releases/2011/03/110309131924.htm

"Praise the Lord! For it is good to sing praises to our God....His understanding is beyond measure." (Psalm 147:1, 5)

On a particular occasion many years ago, an artist showed me a painting she had just finished. I confessed that I was into music more than art, and thought it looked good but didn't really understand what was going on. She then gave me a brief lesson in art fundamentals as they applied to her picture.

Painting fundamentals

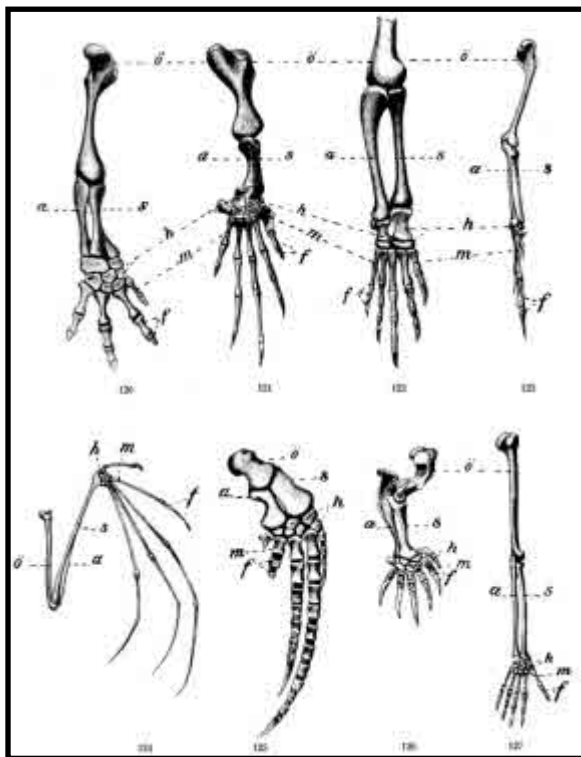
In the center was her main theme, in this case a particular person. There were a number of other people incidentally in the picture. She explained that these people represented a repetition of the main theme and this repetition was used to bring unity to the entire picture. Much of the skill in her art was how the incidental people were treated. There were no two people exactly alike, differing in facial features, facial expressions, size, orientation, and color.

Her goal was to have enough unity to give the picture coherence, while enough variety and variation so that a person could keep discovering new things as he or she looked at it more carefully. In general, there should be a purpose for the variations; it is the task of the artist to communicate that purpose. However, a certain amount of random variation gave the picture freshness, such that it was not completely predictable.

She equated beauty with a balance between structure, repetition, purpose, and organization on the one hand, and variation, uniqueness, and randomness on the other. Beauty was the product of the various individual, unique expressions of the theme. As she explained these things, the picture became fascinating. I had a new appreciation for what a good artist could do with a scene.

God's painting

Some time later I was looking at a stand of oak and pine trees growing on the side of a hill. It struck me how much of what she taught me about painting applied to God's design in nature. The distinction between pine trees and oak trees was obvious. Yet, there were no two oak trees alike and no two pine trees alike. What I enjoyed most about the scene was the variations, the dif-



Homologous skeletal structures: 120 salamander, 121 turtle, 122 crocodile, 123 bird, 124 bat, 125 whale, 126 mole, 127 man.

God has used a common theme for a number of different kinds. Variations of the theme suit the functional needs of each of the kinds.

There is organizational beauty in the balance between repetitious structure of the basic pattern and variations of the pattern by individual instances.

http://commons.wikimedia.org/wiki/File:Arm_skeleton_comparative_NF_0102.5-2.png

ferent ways a tree could be shaped and still be a pine tree or still be an oak tree. The different shades of green or brown, the varying intensities of light and dark, the different overall shapes of the trees, the variations in branching — these were what made the scene beautiful. God was the master artist with a beautiful balance between structural organization and unique, intriguing variations. So, the artist was actually copying principles God Himself used.

God has used this same principle with homologous structures between species. Homologies are patterns of resemblances between similar structures of different but related species. The accompanying illustration shows certain homologous structures common to amphibians, reptiles, birds, and mammals including man.

God intends this organizational beauty to be a testimony to man of His creative greatness. I find it interesting that this is somewhat acknowledged even in a recent book on evolution written by two outspoken evolutionists, Michael Ruse and Joseph Travis (2009). In the book, they summarize the understanding of Louis Agassiz (1807-1873), who was a great paleontologist and the founder of glacial geology.

Agassiz argued that homologies, which extend across embryonic forms and back through the fossil record, are evidence of the existence of "One Supreme Intelligence" who had conceived these resemblances before he created them.... Agassiz's God is like a musician or architect who enjoys playing several variations on a few basic themes.

So, the authors called attention to how Agassiz compared God's creative use of anatomical homologies as similar to that of "a musician or architect who enjoys playing several variations on a few basic themes." Unfortunately, in the next paragraph the authors try to defuse this testimony with the statement,

Pointing to the same phenomena cited by Agassiz, Darwin argued that homology and biogeography are evidence of descent from a common ancestor, while the adaptedness of form to function is evidence for natural selection.

Awe and wonder

I believe Darwin's statement is without foundation. Evidence is a form of proof. Homologies do not prove any information about the validity of evolution, particularly when the context is a discussion about evolution versus special creation by a living God. Homologies should give us a sense of awe and wonder at God's wisdom and greatness as we see the beauty in His creation. Man is "without excuse" in denying Him His rightful glory.

Reference

Ruse, M. and J. Travis. 2009. *Evolution The First Four Billion Years*. The Belknap Press of Harvard University Press. Cambridge, MA, p. 405.

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All by Design

by Jonathan C. O'Quinn, D.P.M., M.S.

Sperm Whale Echolocation

Have you ever wondered how some of the mightiest creatures of the sea find food?

The Bible teaches that living creatures were created according to kinds. Let us consider the sperm whale as an example of a marine animal specially equipped to find food in its environment.

Sperm whales feed mainly on large cephalopods such as squid, which they find at depths of 400–1,200 meters during dives that can last more than two hours. At these depths, there is essentially no sunlight. Scientists have learned that sperm whales use echolocation, in much the same manner as do bats.

During dives, sperm whales make loud clicks at regular intervals, listening to the reflection of these sound waves off any nearby objects, such as schools of squid. These clicks have high directionality, high source levels, and frequencies around 15 kHz, suitable for long-range sonar.



Like bats, the whales are able to process the timing of reflected sound waves to develop a picture in their minds of the location of nearby prey. When prey are detected, the whales then make clicks with increasing frequency to give more rapid updates on the precise location of prey just before capture.

What wisdom exists in the design of these magnificent creatures! It is utter folly to suggest that such a perfect biological system could have developed by chance and in stages. In deep, dark water, such a method for finding food either works right the first time or never at all.

Bibliography

1. Watwood, S.L., et al. 2006. Deep-diving behavior of sperm whales (*Physeter macrocephalus*). *J. Animal Ecology* 75:814–825.

Erratum

The *All by Design* article last month featured the unique design of swordfishes which allows the “heating” of the eyes and brain, resulting in increased visual resolution. The editor made an error by including a photo of a shark rather than a swordfish. I apologize for the error.

— Editor

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